

AMENDMENTS TO THE CLAIMS:

The following Listing of Claims replaces all previous claims and listings of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A fiber optic modulator system, comprising:
 - an optical source;
 - a first polarization maintaining (PM) coupler for splitting a signal received from said source into ~~two~~ a first optical path and a second optical path paths, said first optical path and said second optical path two paths forming a Mach Zender Modulator (MZM);
 - a phase modulator disposed in [[a]] the first optical path of the first PM coupler;
 - a piezo-electric transducer (PZT) disposed in [[a]] the second optical path of the first PM coupler;
 - a second PM coupler for recombining said first and second optical paths;
 - an amplifier disposed between the phase modulator and the second PM coupler for amplifying a signal from the phase modulator; and
 - a detector for detecting the output from said second PM coupler.

2. (Currently Amended) The system of claim 1 further comprises comprising:
 - a fiber tap for sampling output from the second PM coupler;
 - a d.c. photodetector for detecting the output of said fiber tap; and
 - a phase locked loop (PLL) system disposed to receive a signal from said d.c. photodetector, said PLL system providing a feedback signal to said PZT for controlling the relative phases of said first and second optical paths.

3. (Original) The system of claim 2 wherein said PZT controls the optical path length of said second optical path.
4. (Currently Amended) The system of claim 2 wherein said phase modulator is ~~made of~~ comprises lithium niobate (LiNbO₃).
5. (Original) The system of claim 4 wherein said phase modulator imprints an analog signal into said first optical path for modulating a signal from said optical source.
6. (Original) The system of claim 5 wherein said phase modulator enables phase modulation of signals in said first optical path by an RF signal, the phase modulation being detected by said second PM coupler.
7. (Original) The system of claim 6 wherein said phase modulator maintains optical polarization of signals from said optical source.
8. (Original) The system of claim 7 wherein said optical source is a diode pumped Nd:YAG ring cavity laser.
9. (Currently Amended) The ~~apparatus~~ system of claim 1 ~~wherein the amplifier is an 2 further comprises:~~ erbium doped fiber amplifier disposed in said first optical path between said phase modulator and said second PM coupler.
10. (Currently Amended) The ~~apparatus~~ system of claim 2 ~~further comprising~~ comprises:

a second phase modulator disposed in said second path.

11. (Currently Amended) In a fiber optic communication system having at least one fiber optic modulator, a method of enhancing the performance of the communication system comprising:

providing an optical source;

splitting signals from said optical source into first and second optical paths, said first and second optical paths forming a Mach-Zender Modulator (MZM) cavity;

phase modulating the signals in said first optical path;

amplifying the phase modulated signal in the first optical path;

controlling an optical path length of said first and second optical path paths;

combining the signals amplified signal in said first optical path with the signal in the and second optical path paths; and

detecting the combined signals.

12. (Original) The method of claim 11 further comprising:

sampling the combined signals;

detecting the sampled signals; and

controlling the relative phases of said first and second paths.

13. (Currently Amended) The method of claim [[12]] 11 wherein said phase modulator is made of comprises lithium niobate (LiNbO₃).

14. (Currently Amended) The system of claim [[12]] 11 wherein a LiNbO₃ modulator modulates the signals in said first optical path.
15. (Currently Amended) The method of claim [[12]] 11 further comprising: inputting an analog signal to control the modulation of signals in said first path.
16. (Currently Amended) The method of claim [[12]] 11 further comprising: imprinting an analog RF signal onto said first path; ~~and~~
~~controlling the length of said second optical path.~~
17. (Currently Amended) The method of claim [[12]] 11 further comprising:
~~disposing modulating the signal in the second optical path with a second phase~~
~~modulator disposed in said second path to allow for dual drive modulation.~~
18. (Original) The method of claim 11 wherein the output of said second PM coupler is detected using a plurality of photodetectors.
19. (Currently Amended) The method of claim [[20]] 18 wherein the outputs of said photodetectors are subtracted to implement a balanced detection scheme.
20. (Currently Amended) A fiber optic link system for transmitting signals from a source to a destination having a fiber optic modulator, the fiber optic modulator comprising:
an optical source;

a first polarization maintaining (PM) coupler for splitting a signal received from said source into two optical paths including a first optical path and a second optical path, said two first and second optical paths forming a Mach Zender Modulator (MZM);

a phase modulator disposed in a the first optical path of the first PM coupler;

a piezo-electric transducer (PZT) disposed in a the second optical path of the first PM coupler;

a second PM coupler for recombining said first and second paths;

an amplifier disposed in the first optical path between the phase modulator and the second PM coupler for amplifying a phase modulated signal in the first optical path; and

a detector for detecting the output of said second coupler.

21. (Currently Amended) The system of claim 20 further comprising comprises:

a fiber tap for sampling a portion of the output of said second coupler;

a d.c. photodetector for detecting the output of said fiber tap; and

a phase locked loop (PLL) for receiving a signal from said d.c. photodetector and providing a feedback signal to said PZT to control the relative phases of said first and second paths.

22. (Withdrawn from consideration) A fiber optic communication system comprising:

a transmitter having a fiber optical modulator system according to Claim 1, the fiber optical modulator system including:

an optical source;

~~a first polarization maintaining (PM) coupler for splitting a signal received from said optical source into first and second optical paths, said first and second optical paths forming a Mach-Zender Modulator (MZM);~~

~~a phase modulator disposed in the first optical path;~~

~~a piezo-electric transducer (PZT) disposed in the second optical path;~~

~~a second PM coupler for recombining said signals from first and second optical paths; and~~

~~a detector for detecting output signals from said second PM coupler;~~

~~a receiver; and~~

~~a communication link for transmission of signals from the transmitter to the receiver.~~

23. (Withdrawn from consideration) A fiber optic communication system having:

~~a fiber optic modulator system according to Claim 1, the modulator comprising:~~

~~a first polarization maintaining (PM) coupler for splitting signals received from an optical source into first and second optical paths;~~

~~a phase modulator disposed in the first optical path;~~

~~a piezo-electric transducer (PZT) disposed in the second optical path;~~

~~a second PM coupler for recombining outputs of the phase modulator and the PZT;~~

~~a photodetector for detecting signals sampled from the second PM coupler; and~~

~~the fiber optical modulator system further including a phase locked loop (PLL) for~~

~~providing feedback to the PZT to control relative phases of the first and second optical paths.~~

24. (New) A method according to Claim 11, wherein amplifying the phase modulated signal in the first optical path includes passing a signal from the phase modulator through an erbium doped fiber amplifier.

25. (New) The system according to Claim 20, wherein the amplifier is an erbium-doped fiber amplifier.

26. (New) The system according to Claim 22, wherein the amplifier is an erbium-doped fiber amplifier.

27. (New) The system according to Claim 23, wherein the amplifier is an erbium-doped fiber amplifier.

28. (New) A fiber optic modulator system, comprising:
an optical source;
a first polarization maintaining (PM) coupler for splitting a signal received from the source into a first optical path and a second optical path, the first optical path and the second optical path forming a Mach Zender Modulator (MZM) cavity;
a first phase modulator disposed in the first optical path;
a piezo-electric transducer (PZT) and a second phase modulator disposed in the second optical path;
a second PM coupler for recombining the first and second optical paths; and
a detector for detecting the output from the second PM coupler.

29. (New) A method according to Claim 11, the optical source transmitting an optical signal to the optical coupler, the optical signal transmitted to the optical coupler having an optical power level greater than a threshold breakdown level of the phase modulator.

30. (New) A method according to Claim 29, wherein the phase modulator is a lithium niobate phase modulator.

31. (New) In a fiber optic system having a first optical path and a second optical path, the first and second optical paths forming a Mach-Zender Modulator (MZM) cavity, at least one phase modulator being disposed in the first optical path, the phase modulator having at least one phase modulator having a threshold breakdown level, a method comprising:

providing an optical signal to an optical coupler, the optical signal having an optical power level greater than the threshold breakdown level of the fiber optic modulator;

the optical coupler splitting the optical signal into a first optical signal in the first optical path and a second optical signal in the second optical path;

phase modulating the first optical signal with the fiber optic modulator;

controlling an optical path length of the second optical path;

combining the phase modulated first optical signal with the second optical signal; and
detecting the combined signals.

32. (New) In a system according to Claim 1, a method for detecting an optical signal, the method comprising:

providing an optical signal to an optical coupler;
the optical coupler splitting the optical signal into a first optical signal in the first optical path and a second optical signal in the second optical path;
phase modulating the first optical signal with the fiber optic modulator;
controlling an optical path length of the second optical path;
combining the phase modulated first optical signal with the second optical signal; and
detecting the combined signals.

33. (New) A method according to Claim 32, wherein the optical signal provided to the optical coupler has an optical power level greater than a threshold breakdown level of the fiber optic modulator.

34. (New) A method according to Claim 32, further comprising:

amplifying the phase modulated first optical signal before combining the phase modulated first optical signal with the second optical signal.

REPLACEMENT DRAWINGS:

Kindly enter the enclosed four sheets of replacement drawings, which include Figures 1-9. The replacement drawings are believed to place the drawings in better form. No changes have been made.